

Customer Involvement in Organizational Innovation – Toward an Integration Concept

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ABSTRACT

The integration of customer knowledge into innovation processes not only poses many challenges to companies but also opens up opportunities for new product development and innovativeness. Past research describes a multitude of approaches and practical examples, which companies can refer to if they are willing to tap customer knowledge. With the emergence of social software and/or open innovation there are even more potential paths to follow. In this regard, this research aims to propose a concept that categorizes the available strategies. Based on a structured literature review (SLR) in the domain of open innovation I analyzed the body of related literature and best practices and allocated the identified options within the process of innovation.

The results can be utilized as guidance for knowledge integration and help companies to navigate through the selection process of strategies for customer knowledge integration (CKI) in organizational (open) innovation processes.

Keywords

knowledge management, open innovation, customer knowledge, customer integration.

INTRODUCTION

There is a widespread understanding among researchers and practitioners that the increasing importance of innovation to economies and companies causes a great dynamic. Companies must innovate to manage fluctuating customer demands. Without innovation they would not be able to capitalize on opportunities that new technologies, markets and structures offer and, thus, could not sustain their competitiveness (Kruse & Geißler, 2012). The success of such endeavors depends on the firm's effectiveness in generating, developing, and implementing innovation (Fichter, 2009; Zeng et al., 2010).

As highlighted in several studies, companies are increasingly drawing in external knowledge (EK) to foster their innovation process. They not only focus on ideas generated by external stakeholders, they even invite them to participate along the whole process of innovation (Du Plessis, 2007; Enkel et al., 2005). From a knowledge-based perspective this observation leads to the conclusion that EK (from customers, competitors, suppliers, research institutions, etc.) can be regarded as central benefactor for innovativeness (Xu et al., 2010).

As EK exists in numerous forms and is held by a wide range of knowledge bearers (Kang & Kang, 2009) companies must focus on the most valuable knowledge or base its acquisition, e.g., on strict financial considerations. This leads to an increasing importance of a purposeful knowledge management. Nevertheless, even if a company is able to identify the most valuable knowledge, there are numerous approaches to integrate such knowledge. Plus, each procedure has its own perils and virtues depending on the type of knowledge, company, branch, product, etc.

To provide a first glimpse on the complexity of the above-mentioned situation this study investigates approaches suggested by Open Innovation (OI) researchers and practitioners focusing on customer knowledge (CK). Following Gebert et al. (2003, p. 109) CK can be classified into three categories: In addition to *knowledge for* and *knowledge about customers* there is *knowledge from customers*. While the first type comprises knowledge, which is required to satisfy customer needs and which is located in products, services, markets, etc., the second type accumulates knowledge, which helps companies to understand customers, their beliefs, and needs. Beside these also highly valuable types of CK the focus of this research lies on type number three: knowledge from customers. Such knowledge derives from experiences with products, markets, etc. and can be utilized for innovation purposes. A comprehensive overview on potential knowledge assets associated with this type can be found in Kruse (2012).

With emergence of Web 2.0 technologies the amount of CK and its accessibility have grown significantly (Belkahla & Triki, 2011). Furthermore, the Internet and its various platforms/channels encourage discussions on existing products or ideas for future ones.

Even though the importance of such knowledge is indisputable, companies cannot refer to a general approach that allows them to foster innovativeness through integration of EK, i.e. CK. Following the paradigm shift towards OI (Chesbrough, 2003) many companies already succeed in tapping CK. However, OI lacks an ideal approach as well. In this regard, I suggest a systematization based on the analysis of existing OI projects or platforms. The concept will help companies to map the most suitable OI approach on their innovation demands.

The following section concentrates on innovation and the process of innovation. After introducing the basic terms and selected process model I outline my research aim and methodological approach.

RELATED WORK

Innovation plays a central role in value creation and for sustaining competitive advantages. Organizations need to innovate in order to be able to respond to changing customer demands as well as to capitalize on opportunities offered by new technology and changes in markets (Rowley et al., 2011).

Although this idea is not new, innovation and the process of innovation lack a general definition. Many authors highlight several perspectives, which relate to innovation as a process, as an item (e.g., product, service or program) or innovation as an attribute of organizations. From an output-oriented point of view innovation can simply be defined as “the generation, acceptance and implementation of new ideas, processes products or services” (Thompson, 1965). From a more business-related perspective innovation comprises “the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services” (Du Plessis, 2007, p. 21). Although I do not waive the possibility that the concept can be applied on services as well, the present research is primarily limited to product innovation.

Following Utterback (1974) the process of innovation can be divided into three stages: “generation of an idea, problem-solving or development, and implementation and diffusion” (Utterback, 1974, p. 621). *Generation* involves a synthesis of diverse information about a market or needs, and technologies to meet the needs, which results in a proposal. *Problem solving* is concerned with “setting specific technical goals and designing alternative solutions to meet them” and leads to an original solution or invention. After that *implementation*, i.e. “manufacturing-engineering, tooling, and plant and market start-up required to bring an original solution or invention to its first use or market introduction” is followed by *diffusion*, which “takes place in the environment and begins after the innovation is introduced” (Utterback, 1974, p. 621).

Due to impermanent customer needs, increasing technological changes, and soaring competition innovation is extremely dependent on the availability of internal and external knowledge (Du Plessis, 2007). Hence, current definitions of the process of innovation strongly emphasize the knowledge perspective, e.g., with “knowledge creation” (Miles, Snow, & Miles, 2000) or “knowledge commercialization” (Desouza et al., 2009).

Figure 1 illustrates the process used for this study. Idea generation and research/development refers to what Utterback (1974, p. 621) described with the first and second stage. These steps result in elaborated ideas/sketches or concepts (Bullinger et al., 2010). The following stages separate the phase of implementation and diffusion as suggested by Utterback (1974) and differentiate between early development of a new product and its final commercialization. Hence, the degree of elaboration ranges from early prototypes to final solutions (Bullinger et al., 2010).

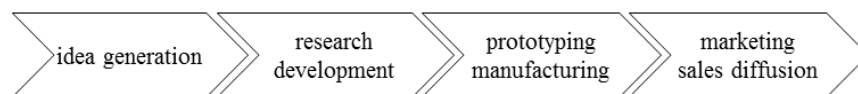


Figure 1. Process of innovation

Most recent research on innovation led to a paradigm shift towards the concept of OI (Chesbrough, 2003). As mentioned earlier, this idea also focuses on tapping customer knowledge. In addition to that, the integration of social media, whose principles OI adopts, facilitates knowledge transfer and, thus, innovation.

Studies already revealed that involving external stakeholders into organizational innovation processes positively influences the success of new product development (NPD) (Kirchmann & Warschburger, 2003). The most common sources of EK include, e.g., academic institution, companies within and outside the value chain, competitors and customers. Despite the rich discussion about the perils and virtues of EK integration current research is restricted to proving general applicability and

usefulness, but lacks a concept that aligns possible approaches on the process of innovation. Xu et al. (2010) already started to integrate modes of innovation and knowledge transfer but rather focus on the knowledge perspective and remain on an abstract level.

RESEARCH AIM

To close the gap described above the present study provides a systematization of CK integration approaches and how they can be allocated within the stages of the process of innovation.

To reach this aim the following questions will be answered:

- How do companies integrate customer knowledge through OI projects?
- How can best practices for integration concepts and strategies be systematized?

To set up the necessary foundations the following section summarises the methodological approach. Subsequently, I conduct an analysis of existing OI projects and best practices, which aim at integrating CK.

Answering question 1 should provide a comprehensive overview on existing strategic approaches to CKI. Following the description of examples, the answer to question 2 will shed a light on a possible systematization, which helps to differentiate the identified CK integration approaches.

METHODOLOGY

Because of the relative novelty of the topic of OI I focused on qualitative data to aid theory building (Ebner et al., 2009; Glaser & Strauss, 1967). First, to improve the theoretical understanding of approaches to tapping customer knowledge through OI a systematic literature review (SLR) was conducted. This methodology provides a repeatable and structured procedure to identify, evaluate, and interpret existing literature (Webster & Watson, 2002). Second, in order to map the findings from literature with current OI projects, company web sites, project reports, and intermediates' websites were analyzed for contributions to answering the above-mentioned research questions.

In order to offer a first glimpse on the data taken into account a mixture of SLR and online data analysis was conducted. Thereby, the present study covers the principles of data collection as suggested by Yin (2003): multiple sources of evidence, a case study database, and a chain of evidence.

The planning stage of the data collection included several steps. First, the research interest of the paper was stated in the form of three research questions. Second, a search strategy was derived. The search strategy comprises the identification of the population, the selection of suitable resources, the definition of search strings, and the determination of inclusion and exclusion criteria (Webster & Watson, 2002, p. xv).

During SLR the search for respective scientific papers was limited to research published between the years 2003, when the term OI was first coined by Henry Chesbrough, and 2012. Books, newspapers, or other unpublished articles were not considered, because the aim of this search was not to cover every single publication, but prominent as well as most recent ones. Therefore, the databases used were restricted to those supplying scientific journals and conference proceedings. In addition to that, only full papers accessible in English language were included.

In reference to the search strategy ACM Digital Library, Emerald Group, ScienceDirect, and Wiley Online Library were used as databases to start with – others are yet to be included. The search terms were derived from the research questions. Following Glaser and Strauss (1967) I began with a broad research aim and collected as much data as possible. Thus, starting with the main term *open innovation*, the first search query resulted in 2389 publications. To limit the findings to papers, which refer to practical examples in their studies *best practice* related terms, such as *case* or *project* were used as additional keywords (Table 1).

Database String	"open innovation"	"open innovation" AND "best practice"	"open innovation" AND title:case	"open innovation project"
ACM Digital Library	212	7	0	4
Emerald Group	476	59	0	3
ScienceDirect	941	6	52	13
Wiley Online Library	757	154	18	11
Sum	2386	226	70	31

Table 1. Results from search various search queries

After scanning through the abstracts, eliminating irrelevant publications (e.g., those which include the search terms but do not offer examples) and duplicates the number of papers could be reduced to 52.

Following the second step of data collection the findings from literature were triangulated with publicly available information, which could be identified following the case descriptions in literature and through observation (company web-sites, project reports, etc.). In theory, the collection of data can be stopped once a point, at which learning becomes minimal, is reached (Glaser & Strauss, 1967). In this case, theoretical saturation was reached when additional studies or best practices could not add to what was already known.

RESULTS

With their knowledge in the form of experiences, ideas, etc. customers possess a highly valuable prerequisite to innovative products meeting their demands. Hence, companies should try to actively involve them into their innovation processes. The aim of such efforts is to generate new ideas, support innovation development, tap external expertise, generate new innovations, and renew competencies (Dahlander & Wallin, 2006; Di Gangi & Wasko, 2009). In this concern the integration of customer knowledge is regarded as a mode of value creation (Reichwald & Piller, 2006) in which customers take part in “operational as well as innovation value-creating activities” (Ebner et al., 2009).

Basic strategies

Across the process of innovation (Figure 1) the degree of customer involvement and amount of customer knowledge varies. They may go so far and co-develop products supervised by the firm (von Hippel, 1986) or just participate in the generation of product ideas (Graham & Bachman, 2004). Each degree of involvement can be achieved by different integration approaches. Literature offers a great variety of solutions that can be derived from existing OI projects. In order to categorize the approaches found during SLR and best practice search this study distinguishes different strategies that aim at innovation. Each strategy refers to one or more stages of the innovation process and therefore supports the sequence differently. Also, each approach comprehends different aspects of CK, such as ideas in general, design input, product improvements, feedback, experience, etc. and entails a different way to integrate it. The following overview introduces the most common approaches but does not claim to be necessarily exhaustive.

The first step towards innovation starts with the generation of an idea (Figure 1). Customers, who are willing to provide ideas, collaborate in online communities, social networks, etc. The degree of involvement remains low because customers rather communicate with each other than directly with the company. If a firm aims at a more controlled discussion and higher participation, idea competitions (Terwiesch & Xu, 2008) provide the necessary environments. Such competitions focus on a limited group of customers who generate ideas in a limited time on a pre-defined platform. Through incentives and direct feedback companies can achieve a higher level of customer involvement (Ebner et al., 2009).

On the next level the best ideas are handed over to R&D. Here, customers play an equally important role. As participatory designers customers can bring in their experiences. This enables firms to “refine and validate the marketing positioning of a product through posting and receiving comments on the forum about the beta-test of its products” (Ramaswamy, 2010, p. 23). Using “configurators, choice boards, design systems, toolkits, or co-design-platforms” (Reichwald & Piller, 2006, p. 7) companies can guide their customers through the configuration of products/variants. This approach leads customers over to traditional mass customization and may involve activities within the final stage of innovation, where they individualize a product. Here, customers are also integrated to act as marketers.

Beside the above-mentioned approaches literature illustrates strategies, which do not focus on a single or two stages of the innovation process. There are strategies, which cover the whole process of innovation and thereby allow a deeper integration. Innovation competitions (Terwiesch & Ulrich, 2009) do not solely focus on the generation of ideas (Terwiesch & Xu, 2008). They also allow customers to accompany firms from the initial idea over an iterative review to the point of where the final product is sold. Crowdsourcing and interactive value creation have a similar focus. In both cases companies communicate problem descriptions to a group of customers and invite them to contribute to a solution (Ebner et al., 2009). While the former can be compared to outsourcing, the latter comprises a stronger focus on value creation. Nevertheless, the definition of both terms is blurry and not disjunctive (Helms et al., 2012).

Best practices

The subsequent sections each represent a category of actual projects, which I identified in current literature or practice. Their categorization follows the proposed differentiation and references the steps of innovation as suggested by Xu et al. (2010). Hence, the examples may be associated to more than one step of the innovation process. Plus, the overview also illustrates examples of service providers (intermediates), which companies employ to get in touch with an existing innovation community.

Due to the limited space in this paper, the following tables can only provide a glimpse on examples, which represent a larger group of OI projects identified during data collection. For each example the related company, year, name, and short description of its focus are listed below.

Idea generation.

Idea collection from customers in addition to traditional idea generation (Sowrey, 1990) proves to be one of the most common approaches in current practice (Enkel et al., 2005; von Hippel, 1978). Cooper and Edgett (2008) alone identified 18 sources of new product ideas in business and highlight the importance of voice-of-customer approaches and other OI strategies.

The timeline of the examples in Table 2 ranges from 2001 to 2012. This indicates that idea generation with customers involved within an OI context can look back to a longer history of successful projects:

Company	Begin	Name	Description	Source(s)
Westwood	2003	Westwood Online	Idea community for computer games	Jeppesen & Molin (2003)
Propeller-head	2004	Propellerhead Forums	Idea community for music software	Jeppesen & Frederiksen (2006)
SAP	2007	SAPiense	Idea community for software products and services	Ebner et al. (2009)
Dell	2007	Dell's IdeaStorm	Idea community for computer products and services	Di Gangi & Wasko (2009)
Starbucks	2008	My Starbucks Idea	Idea community for food products and services	Piller & Vossen (2012)

Table 2. Idea generation projects

Research and development.

During this stage companies may initiate co-design projects (Piller et al., 2006), allowing customers to develop designs or collaborate during the creation of new products. Hence, this stage focuses on concepts rather than developing new goods. Table 3 illustrates some examples:

Company	Begin	Name	Description	Source(s)
Peugeot	2000	Peugeot Concours Design	Design competition for cars	Wei & Wei (2011)
Swarovski	2002	Crystal Tattoo Design	Design competition for jewelry	Fuller (2006)
Audi	2006	Virtual Lab	Design community for an infotainment system	Füller, Bartl, Ernst, & Mühlbacher (2006)
Swarovski	2008	Enlightened	Design competition for jewelry	Füller, Hutter, & Faullant (2011)
SPAR	2009	SPAR Bag-Designcontest	Design contest for a new shopping bag	Bullinger et al. (2010)

Table 3. Research and development projects

Prototyping and manufacturing.

After the conceptual development of innovative products companies select the best drafts and hand them over to production. The aim of this step is to develop prototypes for further testing and manufacturing. In this regard, this stage comprises marketable products created by customers or in collaborative environments.

On the one hand customers may be involved in product individualization and mass customization (Piller et al., 2006) where they contribute knowledge about needs and benefits in respect of potential product combinations. On the other hand customers may also contribute during co-creation (Piller & Vossen, 2012), co-production (Bendapudi & Leone, 2003) and testing of pre-configured products. Table 4 provides some examples:

Company	Begin	Name	Description	Source(s)
Adidas	2006	miADIDAS	Individualisation platform for existing product	Moser, Müller, & Piller (2006)
Volkswagen	2009	App my Ride Contest	Co-creation of mobile apps	Kelleher, C��illeachair, & Peppard (2012)
McDonald's	2011	Baue Deinen Burger	Co-creation contest of a new product based using a configuration tool	www.mcdonalds.de/mein_burger/index.cfm

Table 4. Prototyping and manufacturing projects*Marketing and sales diffusion.*

The final stage towards a commercialized idea is covered by marketing and sales. In this phase companies also tap CK, e.g., by involving customers in co-marketing or social commerce strategies (Koch & Richter, 2009; Piller & Vossen, 2012). Here, customers provide valuable knowledge about the target group and its preferences (buying habits, packaging, distribution channels, etc.). Due to the fact that most of the above-mentioned examples target marketable products and their commercialization these projects already cover aspects of CK powered marketing. Nevertheless, there are projects, which focus on marketing and promotion and do not primarily intend to develop new products (Table 5):

Company	Begin	Name	Description	Source(s)
Procter & Gamble	2002	Connect + Develop	Initiative to turn more technologies into products	Dodgson, Gann, & Salter (2006)
Google	2007	Gmail M-Velope Video Competition	Viral video-competition	mail.google.com/mvideo
Pepsi	2009	Ultimate Refresh	Competition about a song and video to promote product	www.ultimaterefresh.com
Henkel	2011	Mein Pril – Mein Stil	Design competition for labels of a washing-up liquid	Christoph Burmann, Hemmann, Eilers, & Kleine-Kalmer (2012)
20 th Century Fox Germany	2012	Dein Filmplakat	Design competition about a movie poster	unseraller.de/Schlussmacher/Filmplakat

Table 5. Marketing and sales diffusion projects*Integrated/cross-process.*

In addition to numerous projects focusing on just single steps of the innovation process, some approaches do not stick to one stage. These include, innovation competitions, which cover the process of innovation from idea generation to commercialization or innovation communities, i.e. “distributed groups of individuals focused on solving a general problem and/or developing a new solution supported by computer mediated communication” (Dahlander & Wallin, 2006, p. 1246). Table 6 illustrates that examples may overlap with projects from one of the previous stages:

Company	Begin	Name	Description	Source(s)
Volkswagen	2009	App my Ride Contest	Competition about of mobile apps including ideas and customer-developed apps	Kelleher et al. (2012)
Mari-Senf	2010	Senf-Dip	Competition on mustard-bases products from flavor and ingredients to packaging	unseraller.de/mari_senf/senf_dip
Swarovski	2011	Lifestyle Electronics Design Competition	Design platform for consumer electronics	lifestyle-electronics-competition.swarovski-gems.com
Hibiscarin	2012	Hibiscarin Kosmetik	Competition including product tests, idea generation, and marketing by customers	unseraller.de/Hibiscarin/HibiscarinKosmetik

Table 6. Integrated and cross-process projects

The tabular overview gives well-documented examples companies can refer to if they are willing to utilize CK, but is not intended to be exhaustive.

Another possible strategy is offered by companies, which specialized on providing platforms on which firms can get in touch with a community or experts. This approach is often referred to as *crowdsourcing*. In exchange for ideas members of the platform receive rewards, prize money, or other gratifications. Typically, such ventures bring together companies with a large number of creators, inventors, designers, or freelancers. Additionally, many service providers concentrate on certain areas, such as product related safety, health, educational and environmental issues or designs and thereby set themselves apart from full-service providers. Other platforms give companies the opportunity to reach a community of potential customers, who test new products, spread word-of-mouth or influence the degree of popularity of a brand.

Another perspective arises from so called *Idea Contests as a Service* (Piller, 2007). Similar to current software delivery models for, e.g., Cloud Computing, HRM, or ERP solutions, idea contests can be sourced out to social media specialists instead of launching OI initiatives on one of the above-mentioned platforms or an own solution. Example are Brightidea, Pitchburner, or Skild.

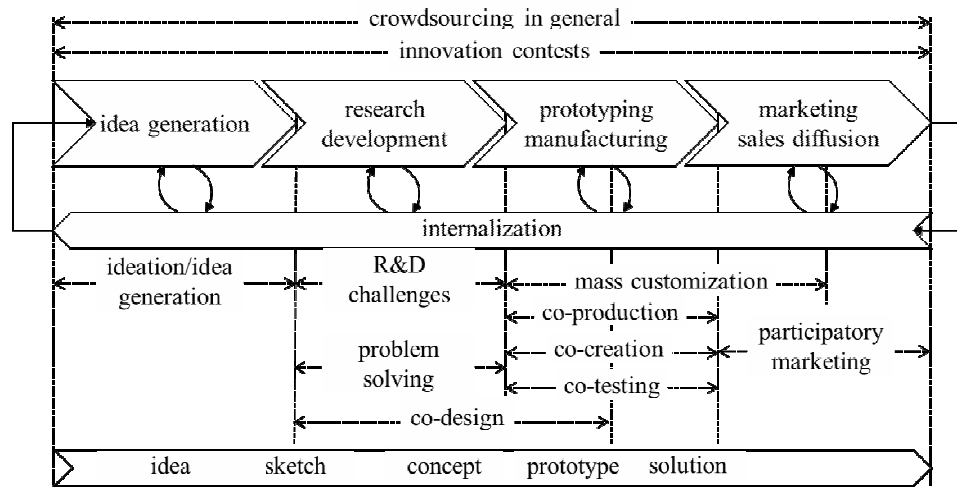


Figure 2. CKI across the process of innovation

TOWARD AN INTEGRATION CONCEPT

The projects described above indicate that companies deliberately chose a certain strategy projecting its outcome. Nevertheless, they often waive the possibility that a well-executed OI project can result in more than grown brand awareness. On the one hand, integrating CK provides valuable input for innovation from numerous ideas to actual innovative products. On the other hand, the wisdom of the crowd can become the curse of the crowd. As occurred when Henkel, a German manufacturing company, decided to change the rating system for entrants shortly before their contest ended, causing the opposite effect with negative reviews in the community and by media coverage.

As mentioned before, potential strategies can range from projects that cover just one part of the innovation process the whole bandwidth. Figure 2 demonstrates the allocation of each approach identified during research to its respective stage(s) in innovation (not claiming to be necessarily exhaustive). It also illustrates the degree of elaboration (Bullinger et al., 2010) and, thus, the output of each strategy.

CONCLUSION

Although the integration of customer knowledge for innovation purposes is considered highly influential on innovativeness and competitiveness, the broad range of strategies poses problems for companies such as an uncertainty concerning outcome and prerequisites.

In this research I analyze and categorize current approaches that support the integration of CK across the process of innovation. Based on a study of projects and platforms throughout literature and web sources I derive a framework, which helps companies to distinguish between different approaches with regard to their outcome or strategic claim. Hence, the contribution of this research is the development of a framework to help companies determine which strategies can be followed.

Besides this practical contribution the study also provides a more theoretical input by introducing a categorization for CK integration approaches across the process of innovation.

Although the research questions could be solved, there are some limitations to be pointed out. The proposed framework should be regarded as an impulse for discussion and does not claim to be exhaustive. Also, the concept should provide a better description of advantages and disadvantages of the depicted strategies regarding output, barriers, etc. Therefore, one of the goals for further research is an evaluation, which comprises a more detailed case study description and allows a deeper understanding of the categorization.

A prospect that could not be covered in this research, but will be studied subsequently, is the evaluation of the given alternatives regarding their particular impact on innovativeness and competitiveness. Due to the lack of suitable criteria further research is needed to develop a conclusive measurement.

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